

Add the following new claims:

AB Sub D 6. A tire according to Claim 2, characterized in that said one edge overlays an edge of the other mix and that said one edge or both of said edges have an end with an oscillatory trace-line.

7. A tire according to Claim 6, characterized in that the two mixes concerned include a mix for a tread of the tire and a mix for a sidewall of the tire and that the two mixes define a junction emerging on an outer wall of the tire.

8. A tire according to Claim 7, characterized in that at the junction an edge of the tread has a portion with decreasing thickness extended by a portion of constant thickness equal to at most 2 mm, the portion of constant thickness ending in an oscillatory trace-line.

9. A tire according to Claim 8, characterized in that the trace-line has an amplitude between 3 mm and 15 mm and a wavelength between 0.1% and 2.0% of the circumferential extension of the said tire measured in the equatorial plane.

REMARKS

Status of the Claims

Claims 1, 2 and 6-9 are currently pending in the application..

Claims 1 and 2 have been amended.

New claim 6 has been added.

Claims 3-5 have been rewritten as new claims 7-9, respectively.

None of the claim amendments or additions constitutes new matter.

Amendment to Specification

Page 2 of the specification has been amended at paragraph 0006, line 2, to change the word "consistent" to – constant --. This corrects an obvious error in describing the thickness of the edge of the mix, and conforms the Summary to the description of the edge thickness set out at ¶ 0011, lines 3-7 of the detailed description. See, also, original claim 4. No new matter has been introduced.

Marked-Up Version

Attached hereto is a marked up version of the changes made to the claims and the specification by the current amendment. The attached page is captioned

"Version With Markings to Show Changes Made."

Claim Rejections under 35 U.S.C. § 112:

Claims 1-5 have been rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Specifically, the Examiner has stated that the term "lap joint" is indefinite with regard to the embodiment of Fig. 3, and questions whether the term is inclusive of the internal type of junction defined in that figure. The specification explicitly discloses that the invention relates to the joining of two rubber mixes "whether this junction emerges on an external wall of the tire or is totally internal." Spec., ¶ 0008. With reference to the embodiment of Fig. 3, the specification further states that such embodiment has "an internal junction between the upper edge of the quasi-triangular section above the bead wire of a tire and the mix used to line the carcass ply of the said tire". Spec. ¶ 0010. Clearly, therefore, the claims are intended to be inclusive of the type of junction shown in Fig. 3.

To eliminate any doubt in that regard, independent claims 1 and 2 have been amended to clarify that only one of the two rubber mixes to be joined need have an edge which is superimposed over, or overlaps, the other mix, which edge has an oscillatory trace-line at its end. Clear support for these amendments is found in ¶ 0013 of the specification and in Fig. 3.

Claims 1 and 2 have been further amended to clarify that the oscillatory trace-line lies in the plane of the joint or overlap. This structure is clearly illustrated in Figs. 1A and 1B. Fig. 1A shows the width of the junction and the axial thickness of the two rubber mixes, while Fig. 1B shows the oscillations of the ends of the two edges in a plane perpendicular to the plane of Fig. 1A. So amended, claims 1 and 2 unambiguously encompass the joint structure of Fig. 3, in which the section 7 has an edge EF which overlaps, on the axially inner side, the layer of rubber mix covering the carcass reinforcement 1 and, on the axially outer side, the sidewall rubber mix, and in which the oscillatory trace-line of the end of the edge EF lines in the plane of the overlap.

We respectfully submit, therefore, that there is no lack of clarity in the scope of the claims, as amended.

Claim 4 has additionally been rejected under 35 U.S.C. § 112, second paragraph, as indefinite on the ground that the relation of the term "periodic trace line" in claim 4 is indefinite with regard to the term "oscillatory trace line" as defined in claim 2. Applicant uses the terms interchangeably in the specification, and has therefore rewritten claim 4, for clarification and uniformity, as new claim 8 to use the term "oscillatory trace line."

In view of the foregoing, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 112, second paragraph.

Claim Rejections under 35 U.S.C. §102(b):

Claims 1-3 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,152,186 to Shibata. Applicant respectfully traverses this rejection.

Shibata discloses a tire in which uneven surfaces of a radial width B are formed over the entire circumference of the tire covering the upper and lower areas of the joint portions Jp between the joint rubbers 7 and the sidewall rubbers 3. The uneven surfaces are formed by use of a vulcanization mold having uneven surfaces engraved on its internal walls corresponding to the width B extending from the upper parts to the lower parts of the joint portions Jp. Col. 3, lines 6-15. Fig. 1 illustrates the uneven surfaces extending over the width B in transverse cross section, and Figs. 3(a), (b) and (c) show different cross-sectional shapes that the uneven surface can take. Col. 1, lines 66-68 and Col. 3, lines 47-49. As is apparent from Figs. 1 and 3, Shibata's uneven surfaces are uneven, or oscillatory, in the axial direction of the tire, and do not represent the shape of the end of a rubber mix in the plane of the lap joint, which in Shibata extends radially. Thus, the Shibata patent does not anticipate any of claims 1, 2 or 7, which replaces claim 3, all of which call for the oscillatory-trace line to be in the plane of the joint or overlap of the two mixes.

Claims 1 and 2 have been rejected under 35 U.S.C. § 102(b) as anticipated by Japanese Patent 3-16972 to Sumitomo, or U.S. Patent No. 3,719,218 to Leybourne, or

Japanese Patent 7-205332 to Bridgestone, or DE 3515944 to Continental. Applicant respectfully traverses these rejections.

U.S. Patent No. 3,719,218 to Leybourne discloses a belted tire constructed with belt plies having serrated edges E of width W. This makes it possible to have less reinforcing cords at and near the edges (it is "the reduction of the number of cords at the edges of the ply that renders the ply edges more flexible and thereby reduces the stiffness of the shoulder . . ." (Col. 2, lines 63-66)). Leybourne does not teach or suggest the same feature applied to a rubber component without cord reinforcement, as claimed by Applicant. Hence, Leybourne does anticipate the claimed invention.

Japanese Patent 3-16972 to Sumitomo and DE 3515944 to Continental are both related to reducing the stress between the carcass reinforcement and the surrounding rubber at the end of the turn-up of the carcass reinforcement. To eliminate sharp stress concentrating changes at the edge of a turn-up, the turn-up is disclosed having an edge with a series of zigzag, corrugated, or saw-tooth shaped cuts. The effect is to reduce the number of carcass reinforcements near the edge of the turn-up. As discussed above regarding Leybourne, this differs fundamentally from the claimed invention, in which an edge of a non-reinforced rubber mix is provided with an end having an oscillatory trace-line to improve adhesion to another rubber mix. Neither Sumitomo nor the DE '944 reference discloses this concept, and thus neither anticipates the claimed invention.

The disclosure of Japanese Patent 7-205332 to Bridgestone is likewise inapposite to the claimed invention. This reference discloses two rubber components connected together with the joint between them being bent zigzag in the thickness, i.e.,

the axial, direction so as to increase the area of the joint. Clearly this reference does not disclose the solution of the claimed invention, which has at least one rubber component having an end whose trace-line follows an oscillatory geometry in the plane of the joint.

The references discussed above do not disclose at least the feature of the claimed lap joint wherein at least one of two rubber components is (1) free of reinforcement cords and (2) has an edge with an oscillatory trace-line in the plane of the joint. Accordingly, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 102(b) with respect to the pending claims 1, 2 and 6-9.

Claim Rejections under 35 U.S.C. §103(a):

Claims 1 and 2 have been further rejected under 35 U.S.C. § 103(a) as obvious in view of JP 3-16972 to Sumitomo, or U.S. Patent No. 3,719,218 to Leybourne, or JP 7-205332 to Bridgestone, or DE 3515944 to Continental. Applicant respectfully traverses these rejections, and refers to the above remarks regarding these references. As discussed above, none of the references teaches or suggests the claimed features of the present invention. In particular, none of the references, whether taken alone or in combination with any other reference, discloses or suggests Applicant's claimed lap joint between a rubber component which is both (1) free of reinforcement cords and (2) has an edge with an oscillatory trace-line at its end in the plane of the joint. Accordingly, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 103(a).

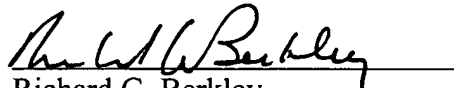
Conclusion

In view of the foregoing amendments and remarks, reconsideration and allowance of claims 1, 2 and 6-9 are respectfully requested.

Applicant authorizes the Commissioner to charge payment of any fees associated with this communication or credit any overpayment to Deposit Account 02-4377. Duplicate copies of this sheet are enclosed.

Respectfully submitted,

By:



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Version With Markings to Show Changes Made

In the Specification:

Paragraph 0006 has been amended as follows:

[0006] (Amended) The thickness of the edge of the mix in question is preferably [consistent] constant over a width at least equal to the desired trace-line amplitude: the said thickness being in any case less than 2 mm in the non-vulcanized condition such that the molding and vulcanization of the finished article obliterates the surface irregularities created at the junction of the two mixes.

In the Claims:

Claim 1 has been amended as follows:

3. (Amended) An article made of vulcanized rubber of at least two rubber mixes of different composition and properties, the said two mixes forming a lap joint [,] in which [characterized in that] at least one edge of at least one of the two mixes is superimposed over the other of the two mixes and has an end with an oscillatory trace-line in the plane of the joint, said at least one of the two mixes being free of reinforcement cords.

Claim 2 has been amended as follows:

4. (Amended) A tire made of several vulcanized rubber mixes, characterized in that at least one lap joint between two mixes is made by overlapping an edge of one of the mixes over [an edge of] the other mix, [at least one of the] said [edges]

edge having an end with an oscillatory trace-line in the plane of the overlap, and said one of the mixes being free of reinforcement cords.

Claims 3-5 have been canceled without prejudice.

The following new claims have been added:

6. A tire according to Claim 2, characterized in that said one edge overlays an edge of the other mix and that said one edge or both of said edges have an end with an oscillatory trace-line.

7. A tire according to Claim 6, characterized in that the two mixes concerned include a mix for a tread of the tire and a mix for a sidewall of the tire and that the two mixes define a junction emerging on an outer wall of the tire.

8. A tire according to Claim 7, characterized in that at the junction an edge of the tread has a portion with decreasing thickness extended by a portion of constant thickness equal to at most 2 mm, the portion of constant thickness ending in an oscillatory trace-line.

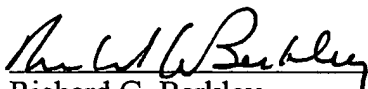
9. A tire according to Claim 8, characterized in that the trace-line has an amplitude between 3 mm and 15 mm and a wavelength between 0.1% and 2.0% of the circumferential extension of the said tire measured in the equatorial plane.

Conclusion

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